Architectural CONCRETE

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Naval Medical Center

OCATED at Bethesda, Md., three miles from the Dis- trict line and within easy reach of the Washington etropolitan area, but far enough out to take advantage of e therapeutic properties of clear air, is the recently dedi- ted Naval Medical Center. This gleaming white, monu- ental group of structures is dominated by the 20-story wer of the main building, the architectural theme of which as sketched by the president of the United States.

Proper hospitalization facilities for the care of casualties war have become all important to the proper functioning armed forces in the field, and this modern unit is designed bear its share of the war effort. The group of buildings ovides housing for a dental hool, medical school, oper- ing room and accessory cilities, recreation, messing id storage, quarters for op- ating personnel and wards nd private rooms for atients.

The buildings generally e three- and four-story re- iforced concrete frame con- ruction although some of ie buildings are of wall- earing type. Compactly ar- inged on a 265-acre site, all uildings of the group are oriented to receive maximum sunlight. The main unit consists of the 20-story tower flanked by four-story north and south wings, and a three-story east wing.

Buildings at the Center are orientated to obtain a maximum of sunlight. The hospital is located in open country where sunlight and fresh air will be much-welcomed medical aids.

These hospital buildings are noteworthy from the stand- point of exterior finish in that architectural precast con- crete panels are used as a facing for most of the wall areas. This use of precast concrete facing panels is not only the largest installation of its kind, but represents a larger variety of shapes and sizes of panels than has been hitherto attempted in building construction.

Precast concrete panels for the walls are backed with masonry. Panels of the same general type were used also by the Navy on a large scale for the exterior facing of the naval model testing basin (ARCHITECTURAL CONCRETE, Vol. 6, No. 1) and for the re- cently built naval wind tun- nel at Carderock (ARCHITEC- TURAL CONCRETE, Vol. 9, No. 1). On those projects, however, the panels serve as face forms for the structural concrete walls and pilasters. Use of the panels for face forms for the naval hospital project, however, was not considered practical. Ac-

cordingly, the structural framework of the buildings was first erected and the panels attached to the masonry backup.

Panels for the project were manufactured in a plant at Woodbridge, N. J., and transported by railroad and truck to the site. Generally, the panels have a thickness of 2½ in., of which the face inch is a mixture of translucent and opaque quartz and white portland cement. Colored aggregates were used in the spandrel panels of the tower and elsewhere as trim to add variety and interest.

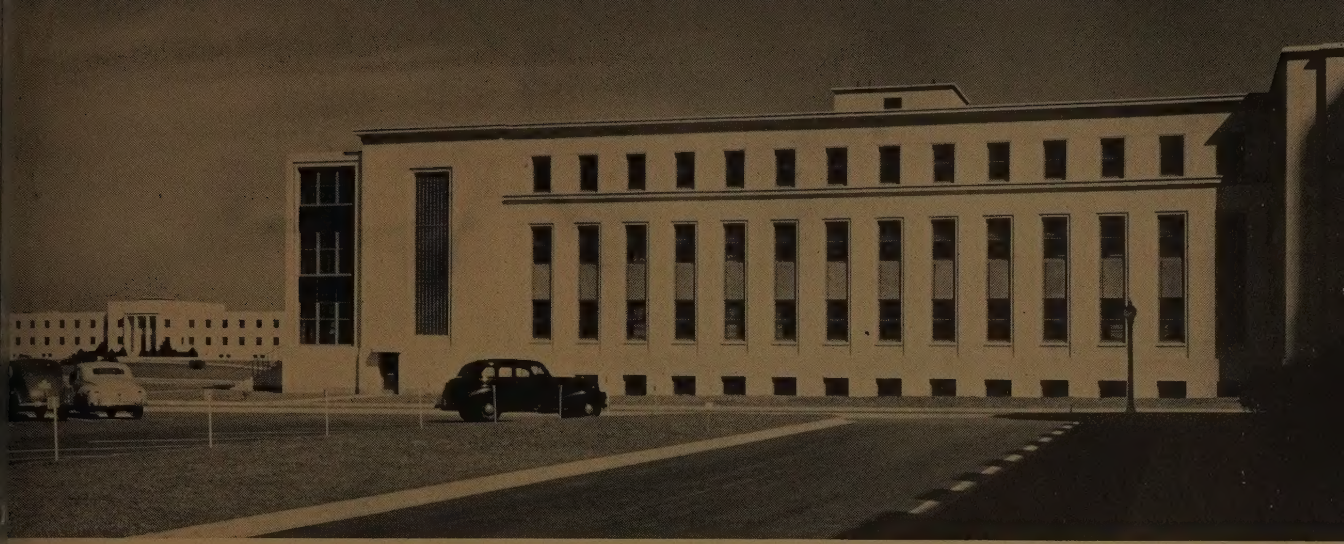
Concrete for the panels, except for the face inch, was a concrete of usual sand and gravel aggregate and normal grey portland cement. The proportion of both facing and backing mixes was 94 lb. cement to 105 lb. fine aggregate and 305 lb. coarse aggregate. The coarse aggregate,with a fineness modulus of 5.00, all passed a ⅜-in. square mesh sieve and was retained on a No. 50 sieve. The fine aggregate, having a fineness modulus of 1.35, was made from the same rock as the coarse aggregate. Panels were reinforced with 4x4-in. galvanized wire mesh made of ½-in. diameter wire fabricated by welding. The mesh was dipped into hot pitch after all cutting and welding were completed. The masonry backup used in the concrete-faced curtain walls was uniformly 8 in. thick.

In the total of 400,000 sq.ft. of concrete panel facing used on the various buildings, about 500 different shapes of panels were necessary. The design of molds and high-class joiner work with heavy rigid construction necessary to maintain close dimensional tolerance, required considerable ingenuity.

A temperature of not less than 65 deg. F. was maintained in the plant during the casting of the panels. Castings were removed from the molds on an average of 16 hours after

Some 500 different shapes and sizes of panels were manufac various architectural details. The panels have a strong texture, exposing the aggregate with electrically driven brushes and washing.

The tow by twin four sto Design o tures is with som details. most of ings ar thick p posed a concrete masonry



a 265-acre plot, the buildings are arranged for pleasing appearance as well as efficient operation. In distance is a building which houses personnel.

ıcing. The face aggregate was exposed by electrically ven steel brushes and cleaned with a light acid wash.

In the use of precast concrete panels, the architect tains a greater freedom in placing joints where they are sirable for architectural effect, as well as a more integral nstruction for watertightness than is practicable when tural stone is used. Panels of any size or shape can be ılded to meet specific design requirements. The use of rious natural stones, manufactured ceramics, and glass gregates makes possible an almost unlimited color range.

The buildings of the Medical Center were designed by the Bureau of Yards and Docks; Rear Admiral Ben Moreell, chief of bureau. Frank W. Southworth was project manager, responsible for requirements set forth by the Bureau of Medicine and Surgery; Ross T. McIntire, surgeon general of the Navy. Paul P. Cret, of Philadelphia, was retained as consulting architect. The contractor for the buildings was John McShain, Inc., of Philadelphia. Capt. Hugo C. Fisher, USN, was officer in charge of construction for the Navy Department.

Kentucky Completes Six New Armories

By Brig. Gen. John A. Polin*

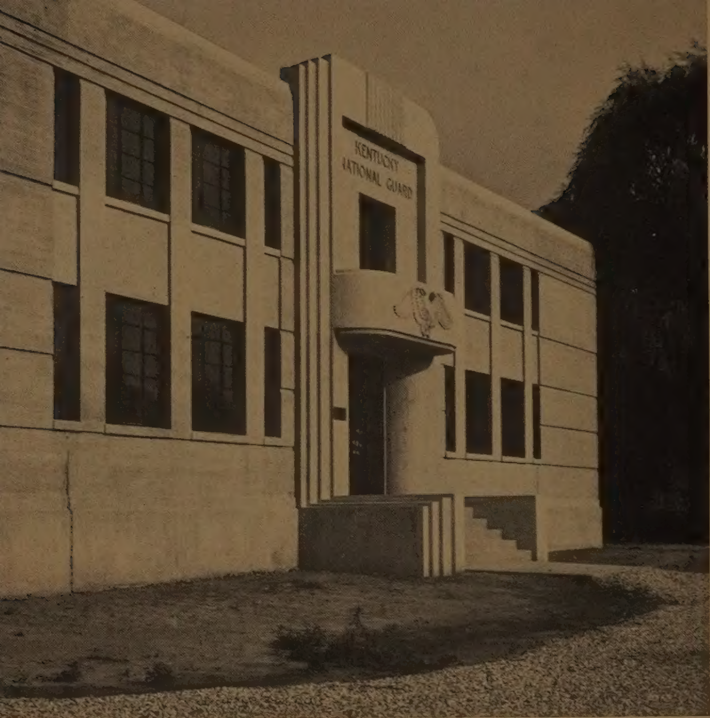
N historic Harrodsburg, Ky., a restored version of old Fort Harrod, with log dwellings, blockhouses and stockade, rves to preserve America's first wilderness settlement west the Alleghenies.

Countless visitors from over the nation know it as the Cradle of the West". Here Daniel Boone and James arrod surveyed and laid out the town of Harrodsburg, d in the old fort built in 1775, George Rogers Clark veloped his plans for the conquest of the Northwest.

Just as Fort Harrod was the early frontier bastion in e winning of the West, so today a new national guard armory—located but a stone's throw from the fort and built of architectural concrete—aptly expresses the present-day conception of an army stronghold.

It is of far more than passing interest to note that the 86 Kentucky National Guardsmen for whom the structure was built have never once set foot inside. As members of the 192nd Tank Battalion, they were called into service before the building was completed. Today they are among the heroes of the battle of the Philippines—last heard from on Bataan Peninsula and now presumed to be with Americans taken prisoner when that last Pacific outpost fell. Four of the battalion officers have recently been commis-

*Adjutant general, Commonwealth of Kentucky.



Main entrance to St. Matthews, Ky., armory. Each armory has a 56x90-ft. drill hall under which is space for storage of mobile equipment.

sioned honorary Kentucky colonels by Governor Keen Johnson.

Certainly, neighbors and relatives are convinced, some of those who took part in the Bataan action will return to their homes in the bluegrass country. And when they do come back, they will find one of the most complete armory structures awaiting them as a center for their peacetime activities. At present the Kentucky Active Militia occupies the quarters.

Of equal importance to the Active Militia elsewhere in the state are five other armories of similar design and construction, also completed within the past year. These are located at Springfield, Williamsburg, Harlan, Carlisle and St. Matthews—all erected to answer the serious problem of supplying adequate space for national guard unit activities.

Housing of these units had been a problem for some years. In certain cases it was impossible to find quarters of sufficient size and convenient arrangement to serve the purposes of the Guard. In some districts, old garages were used; in others, empty stores or lodge halls. The state rented these quarters from private owners.

During an investigation by the National Guard Bureau, it was found that 20 such quarters were below the minimum standard set for housing the units. As a result the securing of new quarters was recommended, but since the buildings then in use were the best to be found, the only alternative was to build new armories in districts where most neede

To provide for construction the Commonwealth Gover ment authorized formation of an armory corporation wi power to sell bonds. The bonds are to be armortized b payments made out of appropriations ordinarily made f building rentals, and by rental of club rooms and dr halls to civilians for public gatherings.

Strict economy in construction was the watchwor Assistance was sought from the WPA, and even with t help of this federal agency, further economies had to made by omitting some features in the armories to ke within budgets.

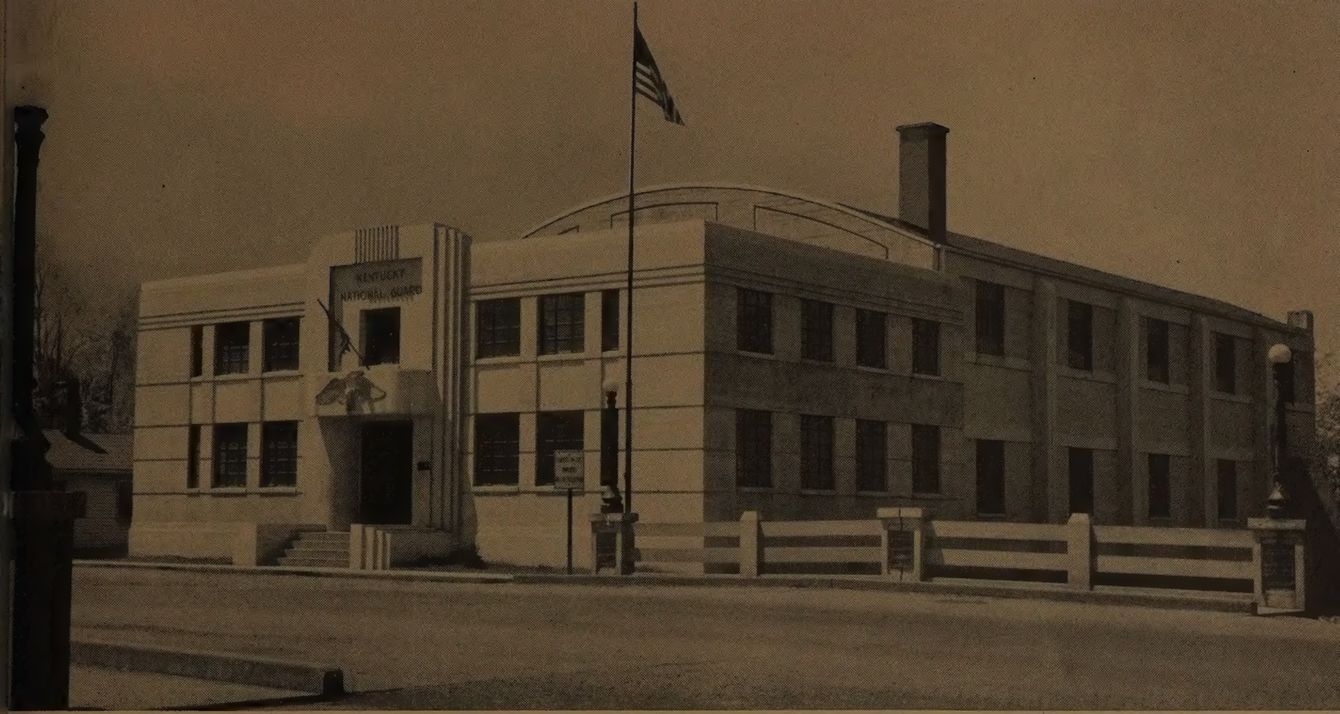
Major Edd R. Gregg, of Louisville, was selected as arch tect and he carried on the planning until called to acti service. He is now overseas with the 138th Field Artille Plans were completed by Henry A. Kersting, formerly as ciated with Major Gregg, but later with the state divisi

Restoration of old Fort Harrod.

of engineering and construction, Department of Finan Ralph Wyatt, chief engineer in the Department of Finan and Preston S. Sinton, assistant chief engineer, handl respectively the supervision of the work and contracts a materials purchased for the state. E. A. Marye was charge for the Kentucky WPA organization.

Considerable attention was given to the type of mater to be used, and the decision in favor of architectural co crete was made after responsible state officials made a to of inspection of concrete buildings completed or under co struction with WPA labor in Kentucky.

Another factor entering into the choice was the necess of constructing buildings which would require low ma tenance. This was of prime importance since the state previous years had experienced high maintenance charg



odsburg armory is typical of all six Kentucky structures. The guardsmen for whom this armory was built have never been in it, since they—like the Major Edd R. Gregg, of Louisville—have long been serving overseas. Plans were completed by Henry A. Kersting of the state division of engineering uction. All of the armories were built by WPA.

many of its buildings. With concrete buildings the intenance would be greatly reduced and the state's keep load substantially lowered.

Each of the six armories has a 56x90-ft. drill hall over ich is a roof consisting of structural slabs of insulation terial on concrete purlins which are supported by con- te arches. Clear height is 20 ft. at the center. The arch nstruction was used to provide sufficient height for basket- l and other games while at the same time making it necessary to increase the height of the exterior walls. e insulation material is left exposed on the inside to ovide excellent acoustics.

The drill hall has maple flooring placed over the concrete subfloor and treated to assure a satisfactory surface for drilling, games or dancing. This is the only portion of the building provided with wood floor finish. All other floors are concrete with concrete coves at the junction of floors and walls. Under the drill hall is garage space of the same dimensions for housing the mobile equipment of national guard units.

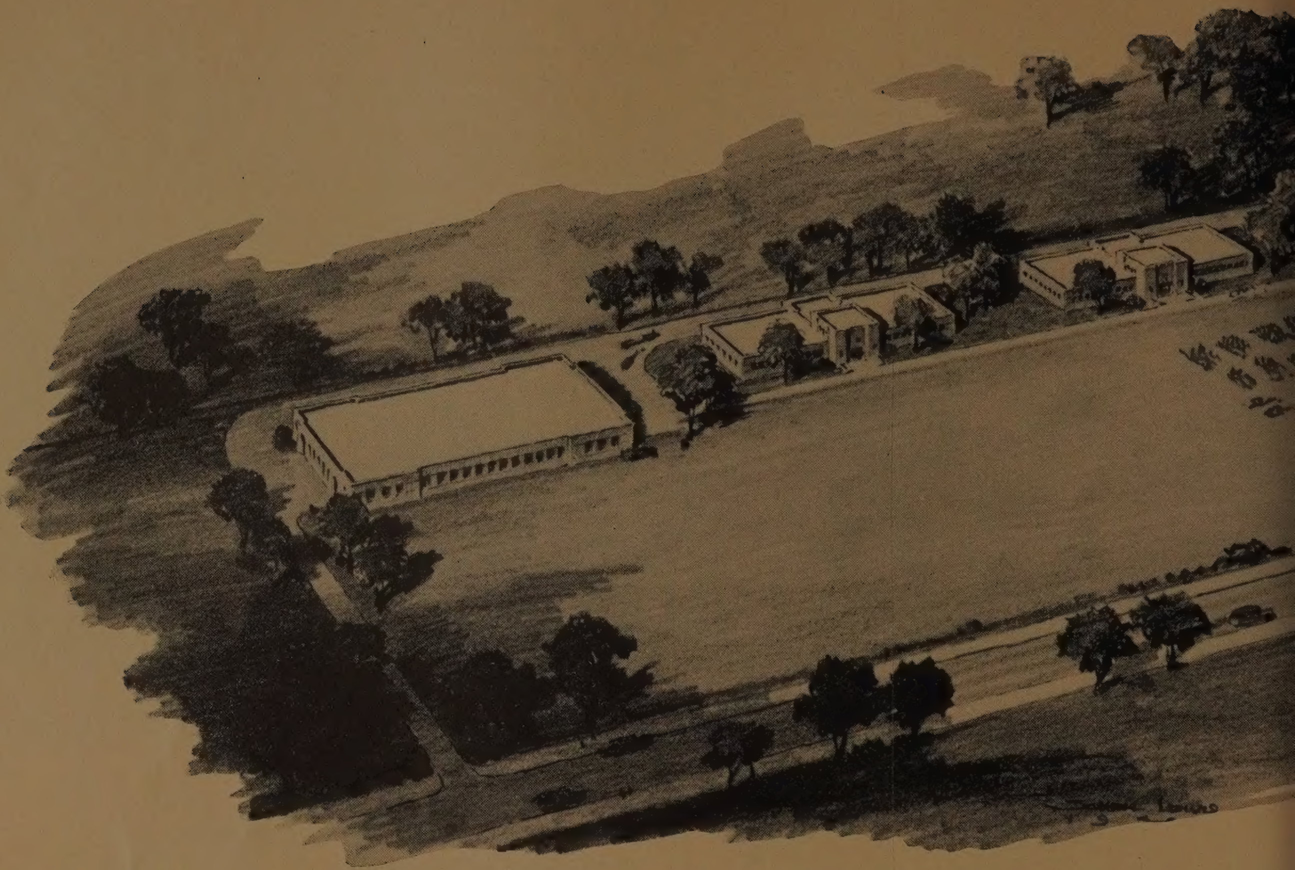
The front portion of each building contains offices, classrooms, lockers, toilets and storage space. In this part of the buildings, exterior walls are finished with a light dressing with carborundum stone to give a smooth, even surface. Elsewhere the walls reveal the grain and joint lines of the T&G boards used as form sheathing for most of the walls.

Walls are divided by rustications in the front part of the buildings and by bands at the rear to relieve the large, plain wall areas and to conceal construction joints. Control joints were spaced evenly around the buildings and are performing splendidly.

Front entrances are projected out from the walls by means of a series of small offsets and are molded against smooth form lining materials. The front doors are protected by canopies or hoods over which are precast concrete panels decorated with eagles in high relief.

The armories are rated excellent risks for fire insurance, and the resulting low premiums plus the minimum of maintenance required are major factors accountable for the low annual cost of operating these buildings.

on joints were located in rustications. Control joints were spaced und the buildings.



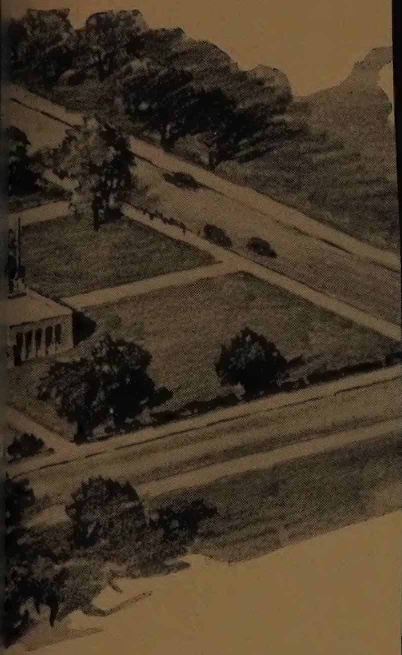
The Memphis Armory Group

By Walk C. Jones*, AIA

THE Tennessee State National Guard Regimental Field Artillery Armory at Memphis, was constructed under the joint sponsorship of the Work Projects Administration, the Tennessee State Armories Commission, the City of Memphis and Shelby County. The buildings were started for use by local units of the Guard, but prior to the project's completion the National Guard was called into service outside of the state as a part of the U. S. Army. With exception of two buildings the entire armory group, toge with buildings on the adjacent Memphis Fair Ground now being used as headquarters for the Second Army. drill hall, mess hall and recreation building are being by remaining members of the State Guard and the A ican Legion.

This armory is a radical departure from tradition in

*Walk C. Jones & Walk C. Jones, Jr., architects, Memphis, Tenn.



composed of six separate buildings arran
ı large site. An armory of the conventi
oughly studied and considered in the f
tistory building to be situated in the bus
wn Memphis. But the six-building ar
ost all one story in height and simple in
structural design—was finally devised to reduce con-
ction cost.

Supply building (third from left in above perspective). The walls are formed against rough-sawed lumber with smooth forming material used to produce the trim. The only finish treatment was a grout clean-down after forms were stripped.

range built beneath the floor.

The architects conceived the build as simple, massive, rugged forms, symb of their purpose and durable in style. board-marked texture was selected to centuate this rugged appearance an accomplish economy in construction f ing and building maintenance. Textur this type were new to this locality w most of the architectural concrete b ings have been cast against smooth liners and often finished with rubbing

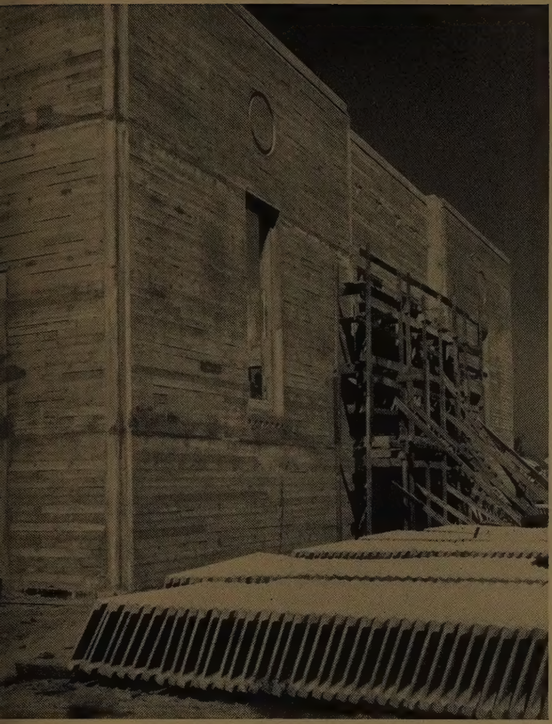
To accent the simple details of the b ings and to outline the masses, trim sur at corners, copings and around oper were cast against smooth forms. Over main entrances of two of the building panels molded with stars and stripe form backgrounds for shields surmou by sculptured eagles.

Largest and most impressive buildi the drill hall, which has heavy buttr supporting steel roof trusses. These tresses were so carefully formed that can sight along their outer edges and de no point out of alignment.

Since two sets of buildings are sin in plan and elevation, an economy in of forming materials was possible. Fo common to various portions were sh from one building to the other. Other forming material used for exterior surf was dismantled and rebuilt in place

Main entrance to one of the supply buildings, now occupied by the U. S. Army. The shield and eagle motif is cast stone. It is used on four of the buildings.

Interior of the drill hall, showing wall columns with cast-in-place anchor bolts ready to receive the roof trusses. Inside wall forms were plywood.



use on different structures. Interior form panels, however, were used repeatedly without dismantling.

All concrete for the floors and walls of the buildings was placed by pump and compacted in the forms by hand-tamping and vibration. Great care was taken in this work, and the resulting wall surfaces are excellent.

Roofs of all buildings but the garage and drill hall are cast-in-place concrete slabs. The latter structures have precast concrete roof slabs, some of which are shown in accompanying photographs before installation.

Herbert M. Burnham and Lucian M. Dent, both of Memphis, were associated with our firm as architects for this project, and Gardner & Howe, also of Memphis, were the structural engineers. Adj. Gen. T. A. Frazier represented the Armories Commission, and W. B. Fowler, Memphis city engineer, was in charge of work for the city under direction of Oscar P. Williams, public works commissioner.

One end of the drill hall. The precast slabs in the foreground are for the roof of the drill hall. Similar slabs were used on the garage. The other roofs were cast in place.

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toughton, Wis., Gymnasium-Armory

By Ellis J. Potter*

YMNASIUMS in small Wisconsin communities have a multitude of purposes which keep these buildings n long after school closes at 4 p.m. They are community dings, civic centers and banquet halls. The new gymum at Stoughton, Wis., is also an armory. All of its ry functions were provided for in the planning of this itectural concrete structure.

he building is approximately 141 by 145 ft. over-all. gymnasium proper, which also doubles as drill hall, ting house and anything else requiring a hall, is 110x82 and is flanked by two lean-to structures which contain ver and dressing rooms. Under one of these lean-to ctures is a basement rifle range.

cross the front of the gymnasium is a two-story portion n full basement. In the basement are a social hall and e rooms. On the main floor is one large meeting room ch can be divided by a folding partition. A kitchen serves area which is used for all kinds of social gatherings.

The second floor is strictly military and houses the office of the commandant of the national guard unit, locker rooms, showers and classroom.

Foundation conditions were excellent since the site lies over a considerable depth of dry sand and gravel. Walls of the building are 10-in. thick reinforced concrete and were cast against plywood forms. Lifts were kept to a minimum of 4 ft., with construction joints located at sills and heads of windows. Rustications in the front portion of the building across the piers between windows were made to coincide with the window muntins to effect a continuous band across the facade.

There are two main entrances, one on each side of the front, serving all parts of the building. Over each entrance is a 4-ft. 8-in. canopy and above each canopy is a lighted panel against which the respective designation "Gymnasium" or "Armory" is placed in vertically arranged free-standing aluminum letters. The illumination is provided by light boxes which are the same size as the reveals in the

w, Law & Potter, architects, Madison, Wis.

The Stoughton, Wis., gymnasium-armory is an all-purpose building—for school games, national guard drill, and public gatherings. Its various fun provided for in the arrangement of the various floor plans. Law, Law & Potter, of Madison, were the architects. The structure was built by WPA.

panels. Zeon tubes concealed in the light boxes throw light back of the letters making them stand out plainly at night.

Structural floors of the building are all concrete, the main floor over the basement area being pan-and-joist construction of 12- plus 2-in. thickness. The second floor and roof of the front portion are 12-in. steel joists with 2-in. concrete slabs. The roof over the gymnasium proper consists of wood trusses with wood roofing.

Floors, stairs and wainscots are finished with terrazzo in a pattern that serves as a guide to traffic up and down the stairs and through the halls to the main doorways leading into the gymnasium and drill hall. The ornamental color in the terrazzo work was obtained by use of green marble. Terrazzo was used also in the toilets and locker rooms.

The interior of the front portion of the building is finished with metal lath and plaster, but the walls of the gymnasium were left as they came from the forms.

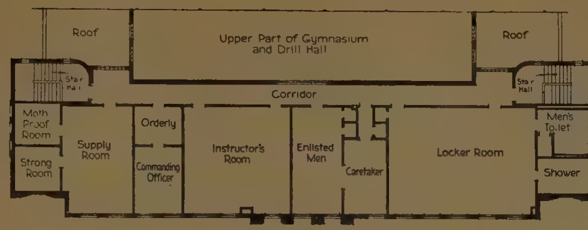
Careful control of concrete mixes was maintained throughout the work, which aided greatly in securing uniform placement and color through the building. Control joints were located at the centers of most windows.

It was originally intended to finish the exterior with a on-and-off grout cleaning, but by the time the buildi was ready for this work, WPA ceased existence and t clean-down as part of the original work project had to abandoned. However, the major portions of the exter walls have such uniform color and show so little discolo tion due to splashing and fill holes left by tie rods that t walls can well wait for a finish treatment. The concrete it came from the forms has produced excellent walls, the photographs indicate.

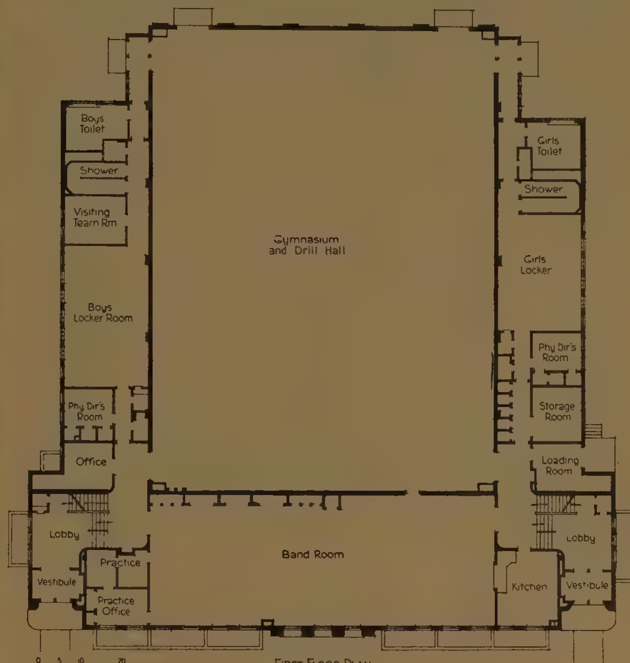
The first architectural concrete building designed by o firm was a resort building erected some 16 years ago in nearby Wisconsin lake region. It has given excellent servi at what must now be considered a ridiculously low fi cost and the maintenance has been negligible over th years. Similarly, the new Stoughton building is consider by all concerned to be a lot of building for the money, a it should certainly function well over a long period at ve little expense for upkeep.

Throughout the preparation of plans and constructi of the building, Robert G. Peterson, superintendent

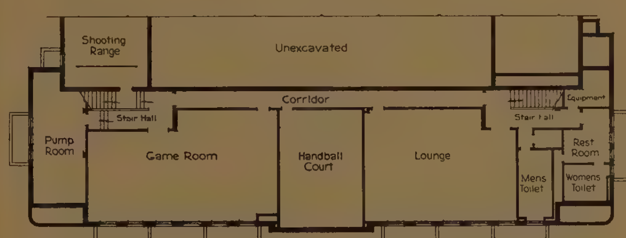
›ols, was of great help in conferring with the architects ·the requirements for the building and later in aiding he inspection work. Credit for the excellent concrete k must go to James Legreid, construction superintendent the Work Projects Administration, who did a splendid of laying out and building the forms and mixing and ·ing the concrete.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



BASEMENT FLOOR PLAN

·ding has two entrances—one on · of the front, serving all parts of ·ng. In panels above both entrances boxes of same size as reveals. Zeon ·w light behind metal letters.

·ides of the combination gymnasium- ·l are lean-to structures housing nd dressing rooms.

Fire control instrument building is a combination classroom and shop structure for the training of ordnance men at Aberdeen Proving Ground, Aberdeen, Md. Smooth-formed against plywood, the main entrance pylons are given a coursed effect by means of rustications. The shops portion (not shown here) is a rigid frame structure with a clear span of 50 ft. This building was designed by U. S. Engineers and built by J. A. Bader & Co., Wilmington, Del.

Concrete at Aberdeen Proving Ground

ABERDEEN Proving Ground at Aberdeen, Md., has two major functions—to test all types of ordnance and ordnance carriers for the Army, and to train ordnance officers and men. Both functions are served by two architectural concrete buildings recently erected.

The fire control instrument building is a classroom structure comprising a 231x52-ft. portion that is part two and part three stories with basement, and a one-story wing used as a shop training building. The other major structure is the industrial assembly and repair building, a huge shop 220x540 ft., in which various items of ordnance are assembled and repaired or altered as a result of tests.

The classroom building was formed against plywood and finished with portland cement paint of a dark grey color to eliminate the gleaming white appearance of the usual concrete finish. It is modern in design with long, continuous bands of windows and wide cantilevered canopies at the third-story roof level giving the building a pronounced streamlined appearance. For the most part the walls are plain, but rustications were used in the main entrance pylons to give a massive coursed effect.

Walls are mainly 10 in. thick, reinforced with two cur-

Canopies at third-story roof level extend 12 ft. beyond walls. Th 6 in. thick. The building is painted with grey portland cement pa

s. of steel. Construction joints are located at sills and roximately 18 in. below roof level. An unusual feature the construction was the decision to form all walls in t. horizontal units. Bulkheads were located at 80-ft. rvals and walls were cast to the full height over this ance. About 72 hours elapsed between the forming of acent wall units. In this way a considerable amount of nkage had taken place in the concrete before an adjoin- section was placed. Since the walls are identical over e areas, considerable re-use of forming materials was ible. Breakback ties were used to hold the forms in place tie rods were loosened about two hours after concrete placed. When the forms were stripped, joint lines left the butting of plywood panels were given a light rub- g to obtain the desired smooth surface.

The canopies at third-story roof level extend 12 ft. be- d the side walls and overhang part of the roof of the ond-story portion. The 6-in. slab of the canopies is sup- ted by 12-in. cantilever beams located at 19-ft. 10-in. ters. Floors and roofs are 4 in. thick.

The training shop wing is a rigid frame structure of 50-ft. ar span. It is 30 to 50 ft. from foundation to top of frames, variation being due to soil conditions. Clear height of shop is 22 ft. 3 in. above floor level. Walls are 10 in. ck and the roof slab 5 in. thick.

One of the side doorways of the industrial assembly and repair building. Control joints are located at the center of all openings.

strial building is a three-gallery structure with high walls and no ate floors. It was built from War Department plans, adapted by ering and construction section of the proving ground.

Concrete for the structure was designed on the basis of 6½-gal. water-cement ratio to produce a minimum ength of 2,500 p.s.i. which was considerably exceeded. Work on the structure was completed rapidly by J. A. der & Co., contractor of Wilmington, Del. Approximate cost of the building was $266,000. Plans were prepared by the U. S. Engineers.

The industrial assembly and repair building is a simple factory-warehouse type structure arranged in three galleries running the length of the building. It has no intermediate floors and therefore comparatively high exterior walls.

Walls are 8 in. thick formed against 4x8-ft. plywood panels. Control joints were located at the center of each window and door opening, and in the ends of the building where the walls are without openings above those at ground level the joints extend to the roof line. Every other horizontal reinforcing bar was cut at control joints, which appear to be functioning perfectly.

Concrete was brought to the site in ready-mix trucks and formed in lifts of about 8 ft. Since wall detail was so simple, work was carried on with considerable speed. After forms were stripped the only finishing done was to knock off slight fins at construction joints and fill up tie holes. No further finish treatment is contemplated.

The assembly building was built from War Department plans which were modified and adapted for use by the Engineering and Construction Section of the Aberdeen Proving Ground. Approximate cost was $590,000.

Practically every community needs more schools or to replace obsolete and unsafe buildings. Plattsmouth School was designed by N. Bruce Hazen, Lincoln, Neb.

The Fairview, Okla., community building contains library, auditorium and city hall under one roof. It was designed by John C. Hope, Oklahoma City architect.

Our expanding air transport system will need airports in 1,000 key cities. Salt Lake City airport administration building; Anderson & Young, architects.

Industry needs ample water supply; healthful towns must have clean water. Canton, Ill., waterworks was designed by Kinsey Engineering Co., Pekin, Ill.

Pre-V-D

for Postwa

IT is widely agreed that after this war millions of Ame
icans may be unemployed for various periods of time-
from a few weeks to many months—while industry retoo
and converts from war to peacetime production. It is al
agreed that the most immediate problem for postwar pla
ners is to devise some insurance against unemployme
distress among returning millions of soldiers and sailo
and released war workers.

For the past several months various groups, both publ
and private, have been developing the idea that a wid
spread program of public works construction would crea
a tremendous pool of useful jobs during this critical peri
that would go far toward bridging the unemployment ga

The most recent definite proposal along this line is co
tained in a booklet published by the Chamber of Co
merce of the United States entitled *Plan Now for Futu*
Public Works. Significantly, this proposal was prepared b
men who represent the two largest groups of practic
planners in the country—Hal H. Hale, Washington repr
sentative of the American Society of Civil Engineers, a
D. K. Este Fisher, Jr., Washington representative of t
American Institute of Architects.

Starting out frankly with the statement that "this is
plea for the planning of essential public works now", t
writers make it clear that public works are not a cure-a
for all postwar unemployment, but can be a vital aid duri
the reconversion period if such projects are planned no
and put into immediate effect when jobs are needed mo

Public works projects suitable for this postwar constru
tion period do not need to be pulled out of thin air li
the "made work", leaf-raking jobs created at the start
the last depression, Messrs. Hale and Fisher point ou
Today practically every community in the nation has
deficit of needed public construction that has been po
poned due to the war and the lack of manpower a
materials.

"Already streets and roads are showing wear and tear th
would not be tolerated in peacetime . . . Health faciliti
have been neglected; needed sanitary sewerage extensio
have not been made; sewage treatment plants cannot b
built; waterworks improvements have been abandoned. .
Almost without exception all counties are deficient in fac
ities for the indigent, for certain types of industrial scho

aining

onstruction

hospitals. Much needs to be done in providing adequate ools everywhere. Municipalities need slum clearance and revitalizing of blighted areas."

These are improvements that are essential to the growth l prosperity of the state, the county and the city. Most hem are needed now. All of them must be built sometime, l in many cases public funds for these purposes have n accumulating from normal tax sources.

But transforming these needs into useful, economical post-r construction projects will take more than a recognition the need for these public works and the jobs they can duce.

"There is a vast difference", say the writers, "between listing of such projects and the actual planning of them. ring the depression, endless lists of supposedly desirable jects were developed . . . but it was months before they ıld be put under construction. Numerous agencies have h lists now, but if the necessity arose tomorrow, or next nth, to throw these 'planned' projects into actual con-uction, only confusion and delay would result."

What is necessary now is physical planning of these public rks—selecting the most important projects and getting em into blueprint form, fully approved and adequately anced. This, say the writers, is the field of the professions ined and experienced in design, the engineers and archi-ts. And these men can do this work now without inter-pting the war effort, since the war construction program practically completed, releasing many men for this new d important task.

To get this physical planning underway now while there still time to do a wise job of it, will require the effort of e entire community.

"If each citizen will take unto himself the responsibility bringing to the attention of the proper authorities the ıportance of postwar public works now, their combined ice will bring results . . . All civic groups should be inter-ted as well as local architectural and engineering societies ıd technical clubs."

"Convince yourself that postwar public works planning is eded now;" the booklet concludes, "join with others who old the same belief, and the job is well on its way toward ccomplishment. Make it your own problem—and do some-ing about it."

Santa Cruz, Calif., courthouse was built for an expanding population. Albert F. Roller, of San Francisco, was the architect.

Among essential public recreation facilities are swimming pools and bathhouses like this one in landlocked Marysville, Kan. Fred Friedel was architect.

A community's health can be gaged by the efficiency of its sewage disposal system. Druar & Milinowski, engineers, St. Paul, designed Bagley, Minn., plant.

Progressive towns and counties are abandoning filthy, rat-ridden jails for clean structures like this one at Cordell, Okla. J. I. Davis, architect, of Muskogee.

The municipal asphalt plant of the Borough of Manhattan, N. Y., consists chiefly of two structures—the mixing plant (left) and the storage building. The elliptical shape of the mixing plant is an economical solution to the problem of designing space to match function. Ely Jacques Kahn and Robert Allan Jacobs, architects-engineers, of New York, were the designers. Stock Construction Corp. was the contractor.

The Ellipse as an Architectural Form
Presents Interesting Problems in Design and Construction

By Robert Allan Jacobs*

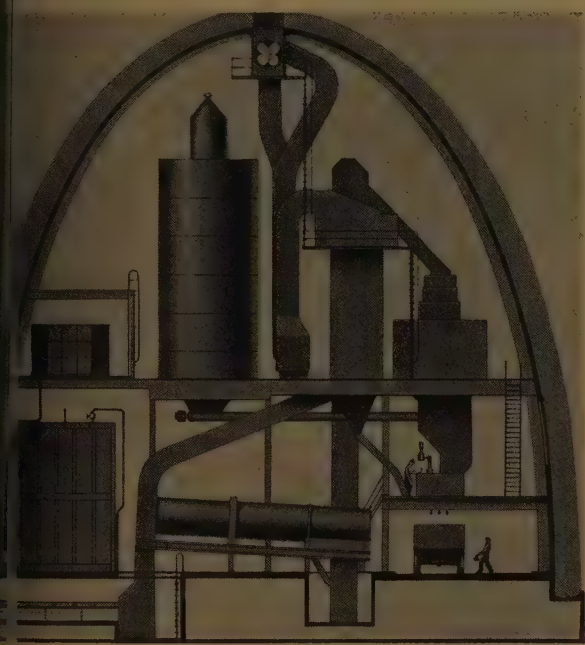
THE dominant unit of a group of buildings recently erected for the asphalt plant of the Borough of Manhattan is an arched structure 90 ft. high in the form of a true semiellipse. Use of the ellipse as an architectural form is so novel (in American architecture at least)that one could hardly be blamed for wondering whether or not the designers were simply attempting to do something different. Such suspicions might be heightened by the fact that the plant is located immediately adjacent to the new East River Drive and is thus in a splendid position to command attention from the heavy traffic that normally uses this important highway. But novelty was far from the intention of the architects, even though the site required buildings of more pleasing appearance than is ordinarily thought essential for asphalt plants in strictly industrial areas.

We started out with the idea of conventional rectangular buildings both in plan and elevation for the mixing plant and the storage building, the principal structures of the group. But a study of the layout of equipment for the mixing plant revealed the interesting fact that the travel of the material conveyors conformed closely to a parabola, starting at ground level on one side, rising to the apex of the parabola

*Office of Ely Jacques Kahn and Robert Allan Jacobs, architects-engineers, New York, N. Y.

the center of the building, and descending to ground level ain near the opposite side. All of the other equipment was :n to fit within the parabola formed by the conveyors. To vate a rectangular structure over such an arrangement of uipment would result in a large volume of unused space the upper portion of the building. But aside from creating ace without function, a rectangular elevation would quire more material for walls and roof, and the 90-ft. dth of the building would necessitate roof trusses or inter columns which would involve needless expense or would terfere with operation of the plant.

The frankest approach to the problem of economically closing usable space was an arch structure approximat-



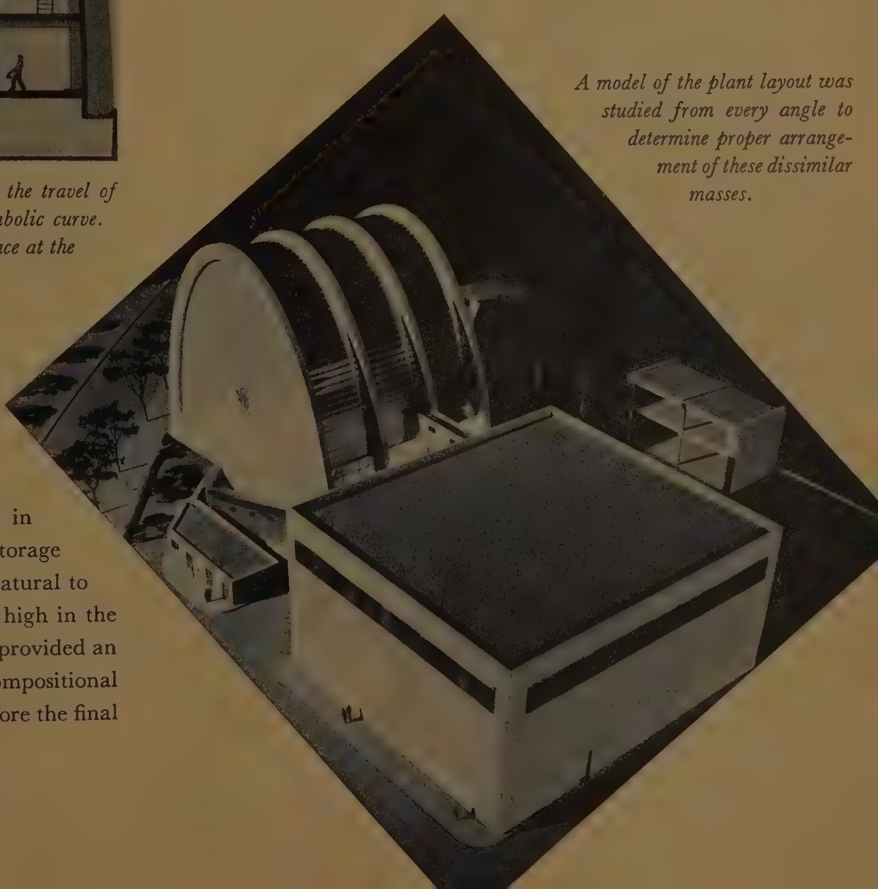
agram of the mixing plant equipment revealed that the travel of through the building would follow roughly a parabolic curve. ng of vertical walls would have left much unused space at the e structure.

ng the parabolic flow of the equipment layut. Studies made with cardboard models d to the adoption of the semielliptical hape. The form of the building, therefore, terally follows the function of the building.

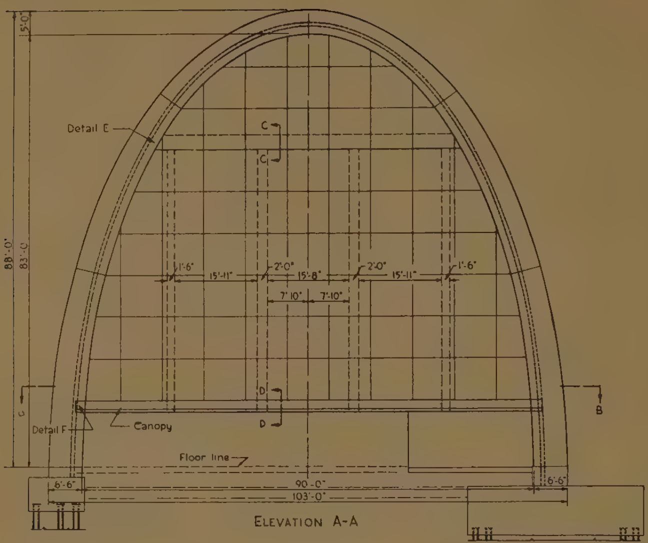
The storage building is just as functional in esign as the mixing plant. Since it comprises storage ins enclosed by retaining walls, it was quite natural to make it a rectangular structure with windows high in the valls above storage levels. These two buildings provided an nteresting contrast of cube and ellipse, the compositional possibilities of which were studied in models before the final arrangement was determined.

Of all materials the one equally adaptable to cubes and ellipses, or any other structural shape for that matter, is reinforced concrete. Because of the continuity of concrete, it does not matter whether the structural elements are straight and vertical and horizontal as in a rectangular building, or are curved in one or more directions as in a building consisting of arch ribs and a connecting barrel. A structurally efficient building and one which is just as satisfying architecturally or even more so is achieved as readily in one form as in the other.

After shapes, plans and site arrangements were determined, all that remained for the architects was to decide upon textures and details suitable for the location of the buildings. Since the buildings themselves were of such simple outline, the primary purpose of both texture and detail should be to give emphasis to the form by contrast, and not adornment. It was decided that vertical walls should be smooth, and plywood was naturally the material best suited for exterior form faces. Plywood was used in 4x8-ft. panels, all joints being concealed in vertical and horizontal V-incised lines. An additional V-strip was added at the middle of each panel to break the broad surfaces into 4x4-ft. panels for better scale. To give the arch barrel greater contrast with the smooth ribs, the exterior face was cast against 8-in. wide T&G lumber which left pronounced horizontal board marks. To avoid vertical joints in the barrel walls,

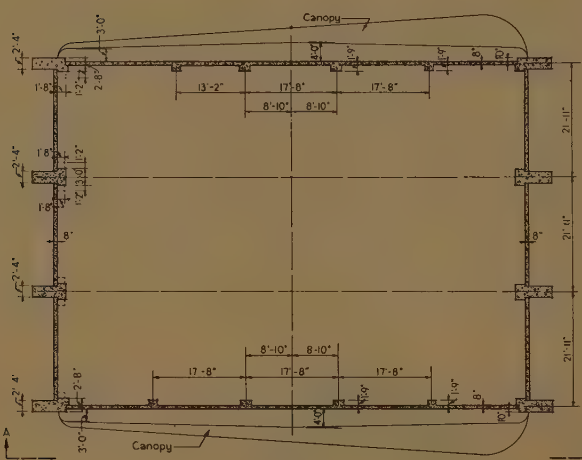


A model of the plant layout was studied from every angle to determine proper arrangement of these dissimilar masses.

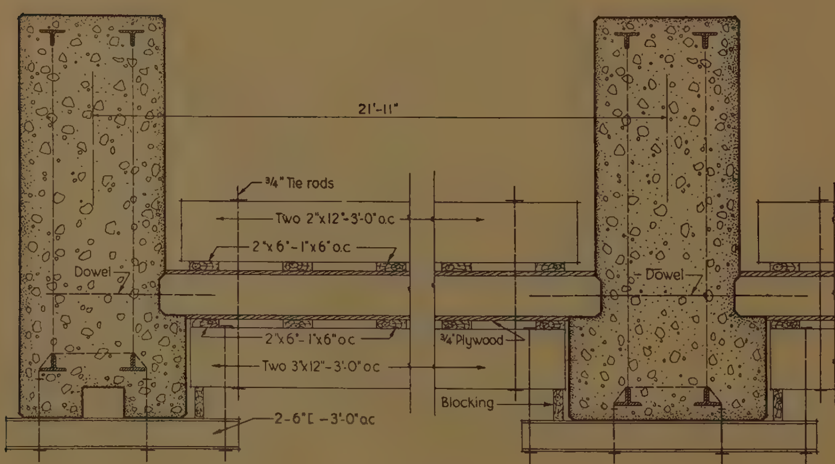


Elevation A-A

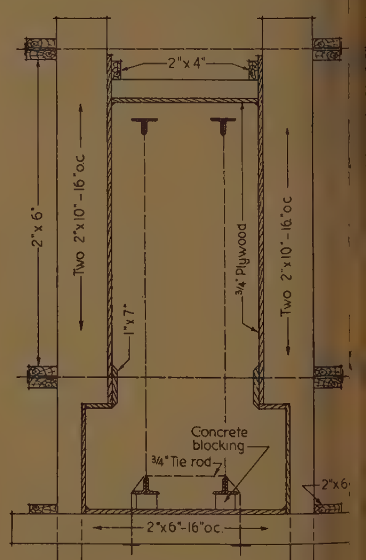
The four great arch ribs were constructed first, using light structu members as combined reinforcing and support for the forms. Groo left in the sides of the ribs for the barrels which were formed late plywood for the inside face and long pine planks for the expos Details of the forming are shown in accompanying drawings.



Section B-B



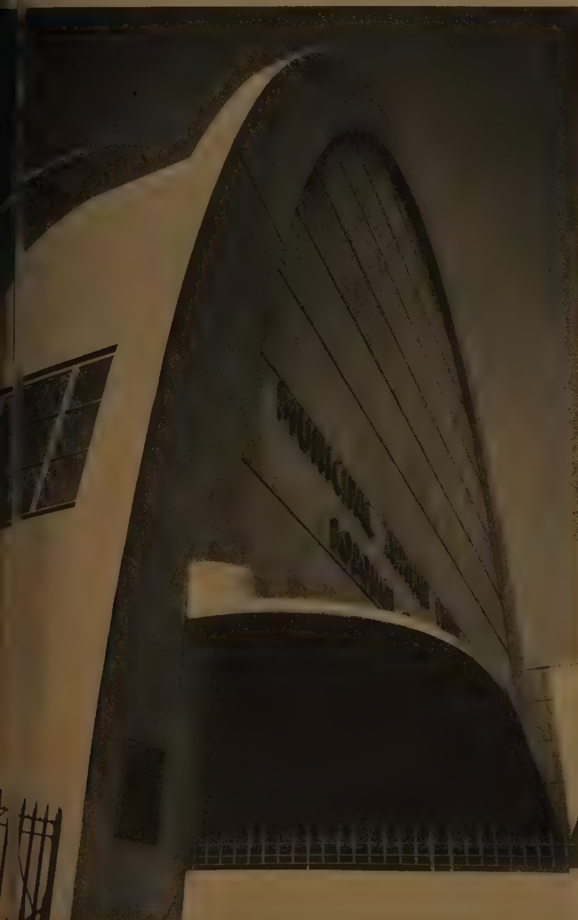
Barrel Forms



Arch Rib Form

2 't. boards were used for the full width between ribs.)f most interest now is the manner in which the desirable ɔtical shape of the mixing plant was executed in concrete, l what unusual engineering and construction methods 'e necessary to achieve a successful building.

'he mixing plant consists of four identical arch ribs ced 22 ft. on centers, each rising to a height of 84 ft. 1. at the intrados and with a clear span of 90 ft. Spaces ween the ribs are enclosed with 8-in. arch barrels, and



ıaterials the one equally adaptable to curve forms and plane sur- reinforced concrete.

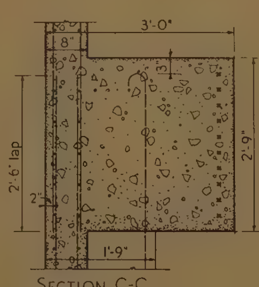
ıe end walls, also 8 in. thick, are retained in the ribs in continuous key formed in the intrados. The barrel walls 'e doweled continuously to the ribs at each side. Rib sec- ons vary in depth from 6 ft. 6 in. at the spring line to ft. at the crown and are uniformly 2 ft. 4 in. wide at the ktrados and 3 ft. wide at the intrados. The 3-ft. width xtends from the intrados to the inside face of the barrel 'all, thus forming a shelf for the support of the arch barrel n the ribs.

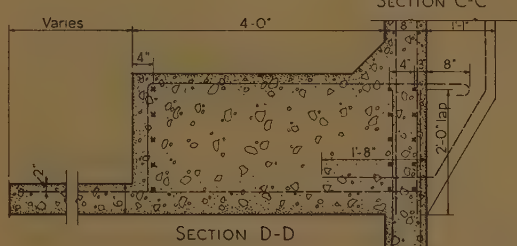
The construction procedure was determined by the most economical and practical method for the centering. As first planned, reinforcement for the ribs consisted of double layers of 1-in. square bars in the extrados and intrados, plus temperature reinforcement in the faces of the ribs. This would have required conventional timber post and bracing falsework to the full height of the arch, and because of the time element, this centering would have had to be erected for the entire structure instead of under each section. The disadvantages of this method were these: It would not permit re-use of forming materials; the falsework would completely fill the interior throughout construction, making it impossible to install equipment before completion of the concrete work; it would be slow and expensive.

At the suggestion of the Stock Construction Corp., the general contractor, centering was developed which became an integral part of the arch ribs, replacing the reinforcing bars as originally designed with light structural steel members. The structural steel shapes, acting both as support for the forms and as reinforcement, consisted of angles back-to-back held together by latticing with arch faces made up of diagonal angles forming a truss. By this system, all centering was carried on the permanent foundations, requiring no temporary foundation for falsework within the structure.

Formwork for the arch ribs was considerably simplified by the use of this integral centering. Forms consisted of ¾-in. plywood with joints cut to radial lines for the sake of appearance. Wales were pairs of 2x6-in. planks spaced on 18-in. centers at intrados and extrados, and by 2x10-in. planks similarly spaced at the sides. The forms were held together by screws and ties so placed that no ties passed through any exposed surface. The wales were held in alignment by means of vertical pairs of 2x6-in. planks.

Concrete for the arch ribs was placed from the springing line up to El. 50, after which the arch barrels were formed in 8-ft. lifts up to El. 27, thus tying the four arches together laterally.





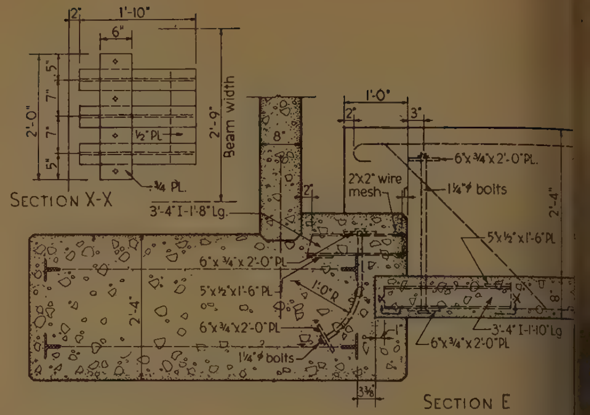
The second construction joint in the ribs was located at El. 80 and concrete was placed to this point. Barrel walls were then formed up to El. 50. Concreting up to this point was done by means of crane and bucket. At El. 75 a scaffold was suspended for the entire length of the structure for convenience in both forming the crown of the arches and barrels and in removing the forms. Concrete for the crown was placed by wheelbarrow.

Forms for the arch barrels were supported by the same U-bolts used to carry the rib forms. These forms were secured by bolting pairs of 6-in. channels or angles to the intrados of the concrete ribs by means of the U-bolts. These supported pairs of 3x12-in. wales spaced 3 ft. on centers, tied to pairs of 2x12-in. wales at the exterior faces of the barrel wall by means of ¾-in. tie rods. No additional support was needed to span the 20 ft. between ribs.

Inside form faces of the arch barrel comprised plywood supported by 2x6-in. planks laid against the interior wales. Outside forms were ⅞x8-in. boards. The unusual thickness of these boards was due to the necessity of cutting down 2x8-in. pine planks which were the only boards available in 20-ft. lengths desired for the arch barrel to avoid intermediate joints.

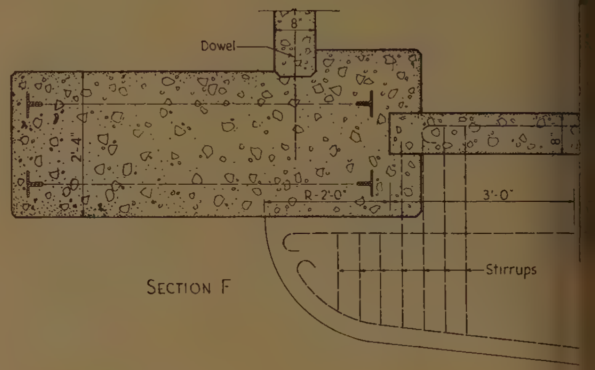
The end walls are stiffened by vertical beams supported on horizontal girders, one girder being located about 80 ft. above the ground. The canopy acts as the other girder (*see Sections E and F*). These girders transfer all wind stresses to the arch ribs which, in turn, are stiffened by the connecting slabs.

Due to the curve of the ribs and the location of the steel, internal vibration and hand-tamping was made rather diffi-



SECTION X-X

SECTION E



SECTION F

cult. By adding more sand and decreasing the stone conten of the mix to improve workability and by generous use o wooden mallets on the forms, good compaction of the con crete and satisfactory surfaces were obtained.

After all forms were removed and tie holes pointed, th surface of the structure was cleaned. There was no rubbin since the natural texture of the concrete as it came from th forms was desired for architectural effect.

There were no unusual construction methods necessar for the storage building which is a system of vertical wal and horizontal floors and roof. The same exterior cleanin treatment was used so that both buildings have unifor color and texture.

The contrast of cube and ellipse anticipated by th studies made with models is pleasantly realized in the com pleted structures. Results obtained have been gratifyin both from the standpoint of design and construction, fo here is one group of buildings about which it can be literall said that "form follows function", and means of executin it were every bit as direct and economical as the design

The architects wish to express their appreciation for th cooperation given them throughout the planning and con struction of the entire project by Stanley Isaacs, then bor ough president of Manhattan, and Walter Binger, com missioner of borough works.

Located at the edge of New York's new East Side Drive, the asphalt plant required more attractive appearance than is ordinarily expected of a purely industrial structure.

hool of Aeronautics is housed in the vocational building of Whitehaven High School, Shelby County, Tenn. This is an industrial structure, rapidly l to meet the nation's need for industrial personnel.

Shelby County, Tenn., Schools

Train Youth for War and Peace

)F two school buildings completed in Shelby County, Tenn., shortly before America entered the war, one s been turned over entirely to the training of aviation chanics. That is the vocational building at Whitehaven gh School, now operated with the approval of the Civil ronautics Authority as the Shelby School of Aeronautics. ie other building, Gragg School on the outskirts of emphis, is an elementary school serving the county's gmented wartime population.

Gragg School was started first and was fairly well under nstruction at the time defense training programs sprang to existence all over the nation to prepare young men for bs in industry, then getting ready for a possible war. The tensification of this vocational program made it apparent the officials of the Shelby County Schools that erection of the vocational building was of immediate importance. Plans which were then in preparatory stages were rapidly completed.

The vocational building was designed for construction in minimum time. It has no frills or fancies, but is a simple, factory-type building 80x120 ft., with large window openings, 10-in. concrete walls, plain concrete floors and a 5-in. roof slab.

Walls of the building were cast in three lifts, the construction joints of the first two being concealed in rustications located at sill line and at the mid-point of the window openings. The third lift was carried up to the roof slab, at which point forms for the cantilevered portion of the roof and brackets were erected and shored, and the roof concrete placed.

If there is any feature of this building at all it is the cantilevered portion of the roof which overhangs the walls on all sides. This serves two purposes—as a canopy against sun to make shades or awnings unnecessary, and as shelter from rain. Directly under this canopy is a sidewalk which is an extension of the concrete floor placed on the ground. The purpose is to provide a walkway under shelter in all weather. By carrying the walk directly up to the wall on all sides it is also easier to maintain the appearance of the building. Such sidewalks are also a feature of the Gragg School.

The vocational building is partitioned into functional units—classrooms and shops—by lightweight concrete masonry. These partition walls have a painted wainscot up to a height of 5 ft.

By working in two and three shifts, the vocational building was completed in rapid time and put into operation training young men to repair and maintain airplanes and airplane engines.

The importance of architectural concrete in getting this building completed in fast time was two-fold. It was possible with this material to put large numbers of unskilled men to work on all parts of the building at the same time. Construction procedure was so simple that the building was rapidly enclosed and its interior cleared for use.

After all forms were stripped from the building the walls were given a light rubbing.

Gragg School required more time for construction since it is a more complex structure in purpose, plan and exterior design.

The building is located on a terrace especially filled i for the purpose. Over the treated clay soil was laid a 4-i floor of plain concrete which was later covered with wo flooring.

Walls of this building are in general 7½ in. thick, finish on the interior with plaster applied directly to the concret with lightweight concrete masonry partitions between room

Douglas fir plywood in 4x8 panels and ⅝-in. thickne was used for forms which were erected for three lifts concrete—from ground level to window sills, to wind heads, to top of parapet walls.

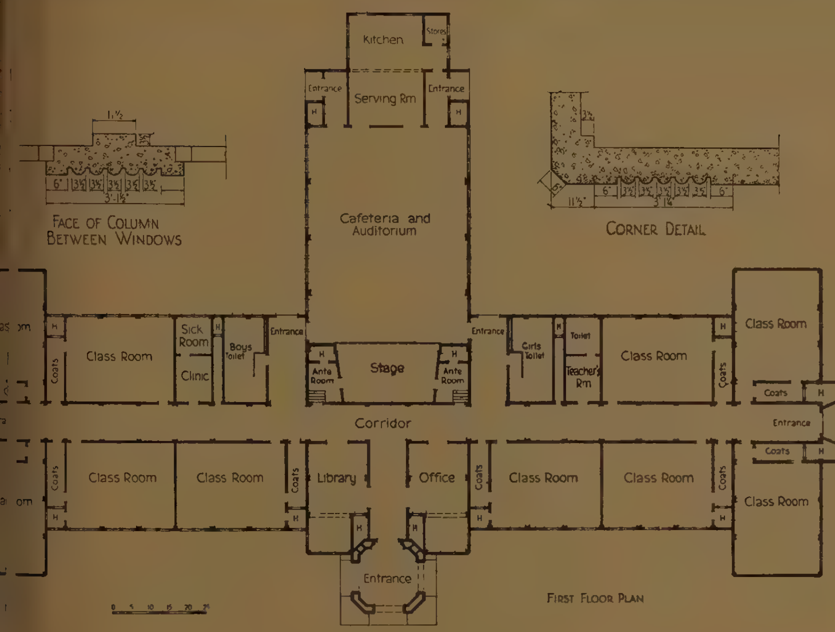
Decorative details, including reeded mullions, den bands, and the fasces motif in some parapet walls and lint were cast against wood molds. Incidentally, some of t wood working necessary for these molds on Gragg Scho was done in the Whitehaven Vocational School.

Expansion joints divide the building into seven units a control joints were used generously, being located in pra tically every window bay. A minute survey of the buildi made some time after construction indicated that 90 p cent of these control joints had functioned as anticipate There is no cracking in the walls.

This building, unlike the vocational building at Whit haven, was finished by rubbing. Accordingly, its exteri color is very light, making the building appear wh against the green, open fields which form its backgroun

As mentioned before, a concrete sidewalk is locat directly against the wall on all sides of this building. O purpose of this walk, aside fro providing passage around t building during incleme weather, is to prevent shrubs a bushes from being planted again the walls. It was considered th planting too close to a wall s

Large wall openings and skylights p vide ample natural illumination for spacious shop portions of the buildi Partitions are lightweight concr masonry.

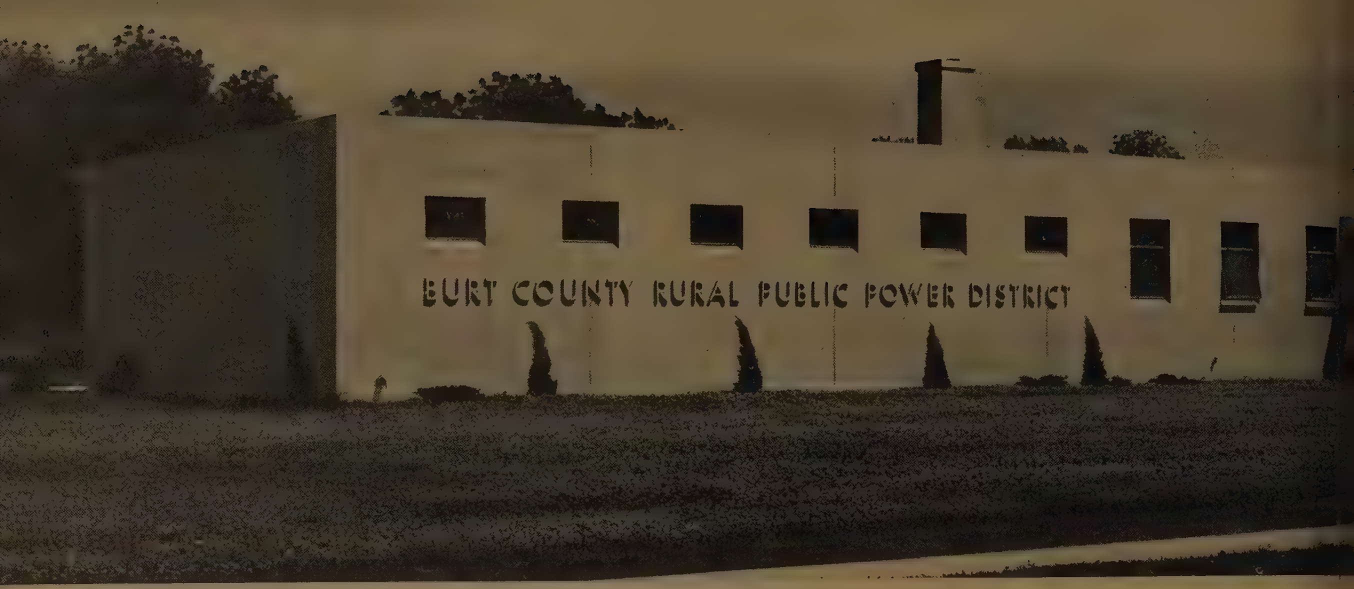


Gragg School was started prior to the vocational building in Whitehaven, but construction was delayed while the latter building was rushed to completion. This building was also designed by Paul Isbell.

Walkways are placed directly against the outside walls entirely around the building, eliminating dirt splashing on them from cultivated planting areas.

timately detrimental to the appearance of a building. he cultivated soil splashes against the wall, and growing ıshes often obscure some of the most interesting features the design. Planting at the edge of the walkway provides :ry attractive landscaping.

Both of these new Shelby County schools were erected / labor provided by the Work Projects Administration. lthough a majority of the men had never worked on an :chitectural concrete building before, they readily adapted ıemselves to the various operations. A number of these ıen have since been employed on large architectural con- :rete projects erected in this area.



Headquarters building for Burt County Rural Public Power District is one of some 60 new buildings erected throughout the nation under the sponsorship of Henningson Engineering Co., Inc., of Omaha, it was built by WPA.

REA Headquarters—Tekamah, Nebraska

By H. H. Henningson*

RURAL electrification has brought modern functional architecture to many small communities. This has been done through a program of constructing REA cooperative headquarters buildings in some 60 small rural communities.

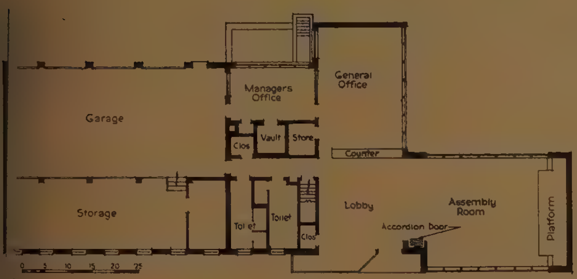
Although none of these buildings are alike in shape or size, certain common features will enable the observer to distinguish any of them as REA buildings despite the fact that most were designed by local architects or engineers.

Shortly after the establishment of REA cooperatives, residences, garages, warehouses and stores were converted into headquarters for local groups. Later, some cooperatives expressed a desire to build or acquire structures of their own and this created a problem. Some of the buildings acquired by local cooperatives were not desirable properties either for expansion or efficient operation; and some of the plans proposed locally for new construction ranged in style from

*Henningson Engineering Co., Inc., Omaha.

Control joints are located in every other window bay along the formed concrete wall. Note flush sills which have been effective in preventing streaking of wall.

or Administration. It is located at Tekamah, Neb. Designed by



an which REA officials consider one of the best solutions to the blem yet developed for headquarters buildings.

the rear of the building is entrance to a large garage. Part of ry headquarters layout is a large parking lot for rural electric tomers who come to pay bills, buy electrical goods and fraternize th distant farm neighbors.

the bleak facade of a general store to the splendor of a county courthouse in miniature. It was then foreseen that REA would have to establish general standards for both acquired structures and new buildings. This brought about the creation of a central office to guide the architectural planning of such buildings.

At the present time the architectural staff of REA makes recommendations to local architects and engineers for such standard details as lettering, counters, bulletin boards, flag poles and required window areas. Furthermore, all buildings are required to have certain functional units within the building and rather uniform sites as to size and parking facilities. How all these common details and facilities are orientated in any building is up to the local designer and the cooperative, subject to final approval of the REA. This system has produced a wide variety of designs, but all are simple and uniformly excellent in arrangement.

The Burt County Rural Public Power District headquarters at Tekamah, Neb., was designed by our office under the system described above. It has, in common with most of the other buildings, a large display window, a lobby and reception room for consumers, a cashier's counter, an office for the manager, a garage and warehouse for storage of trucks, line equipment and materials, toilets adjacent to the public room, an assembly or meeting room for the board of directors, and certain closet areas. We decided to lay this out in a long, single-story structure as the plan indicates. This choice was fortunate because the layout is now considered by REA to be one of the best yet developed.

Especially pleasing, according to both REA and the local cooperative, is the arrangement of lobby and meeting rooms which can be used separately or together, being divided by a movable partition. Also well located is the manager's office which overlooks both general office and garage.

Since most of the early REA buildings were of masonry construction, there was some tendency to use the same type

Certain features are common to all REA headquarters buildings—a display window (left) and large, continuous window openings. The smoot[h] concrete walls of this building were finished with two coats of white portland cement paint.

of construction for the Tekamah project. But when all the advantages of architectural concrete, including economy and the maximum use of local labor and material were considered, it was decided to use concrete.

The walls are 9 in. thick, formed against plywood and finished with two coats of white portland cement paint. Control joints are located at the center of every other window in the portion to the left of the main entrance, and at the middle of the three wide windows to the right of the entrance and at the rear. Although these joints can be seen as straight, true lines, they in no way detract from the appearance of the building. All window sills are flush with the walls and have a 45-deg. slope—a device which has proved excellent thus far in eliminating streaking.

There was only one major design and construction problem. The site being low and near a river offered poor foundation material and a rather high water table. To overcome this both the wall foundations and the floor were supported on 8-in. diameter cast-in-place concrete piles. These piles were placed in the following manner. An excavation was made to a level 4 ft. below the bottom of floor slab level and holes for the piles were driven by a post-hole drill to a depth of 10 ft. Square forms were then erected over each hole to the height of the bottom of slab, and concrete was placed in the hole and up to the top of the form. One reinforcing bar was placed in each pile and extende[d] into the floor slab. The excavation was backfilled with eart[h] which was compacted solidly in thin layers up to the top o[f] the square extension of the circular piles. The 6-in. concret[e] floor was then placed directly on the fill and piles.

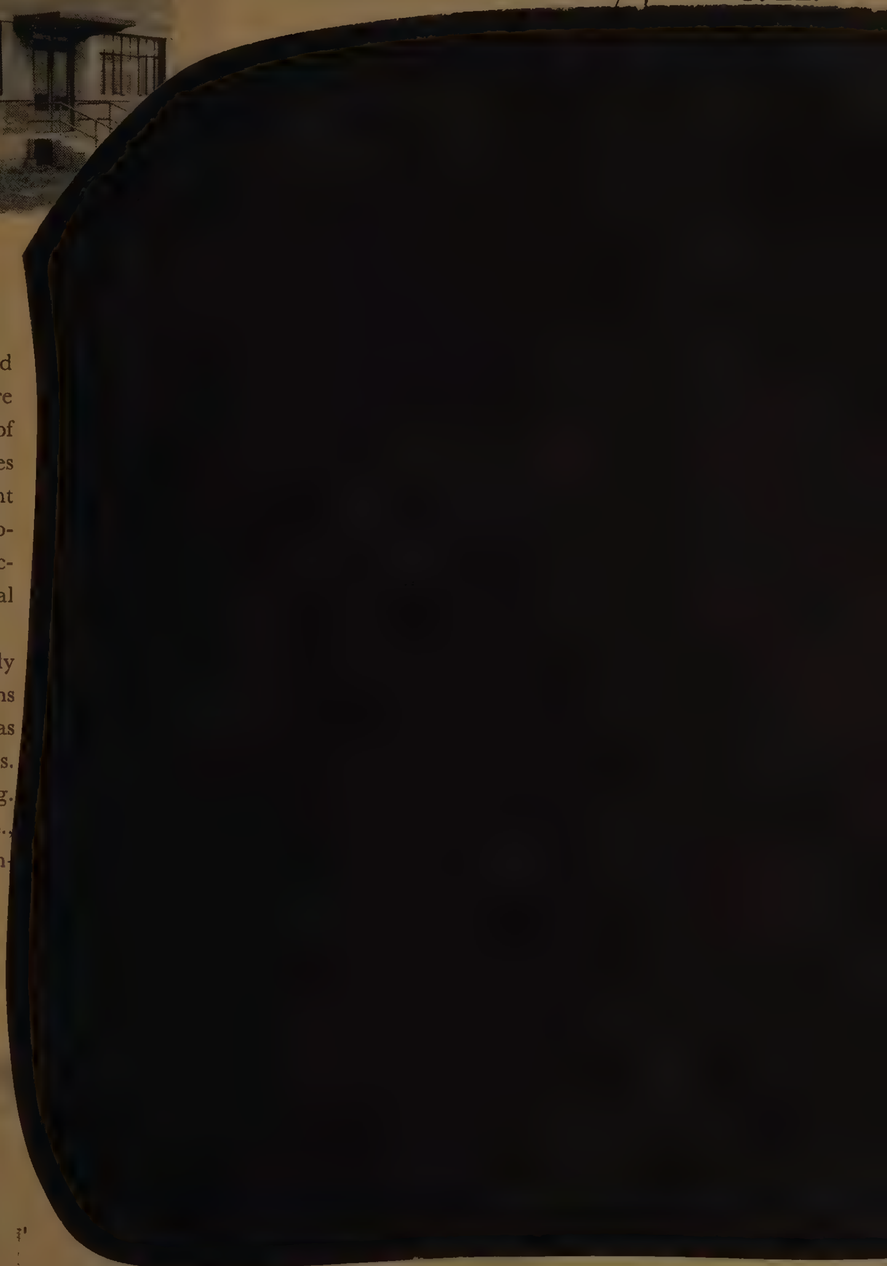
An inspection of this floor within the past month reveale[d] no cracking of any kind.

To the right rear of the building is a large parking lo[t] paved with 6-in. concrete. This serves also as a drivewa[y] for the trucks and other movable equipment stored in th[e] garage which has four double doors.

Floors in the public and office portions of the building ar[e] finished with asphalt tile. In the garage and warehouse por[-]tion the concrete floor is exposed. Interior walls are furre[d] and plastered.

The project was successful in every way. Excellent wor[k] was done on the concrete by the WPA construction superin[-]tendent, Gilbert Hines, who had had considerable expe[-]rience with architectural concrete. The building is highl[y] satisfactory to the manager, E. D. Beck, and to the operat[-]ing staff, which is able to work in rooms flooded with day[-]light. The public in this small community is naturally prou[d] of its most modern public structure.

Marshall Field
Fort Riley, Kan.



HE operations building at Marshall Field s a two-story architectural concrete structure a two-story control tower the top story of h is glazed all around. The building houses ations offices and control rooms for flight ations, and includes a garage for crash equip-—fire engine and ambulance. Strictly func-l in plan, it was designed for economical ruction.

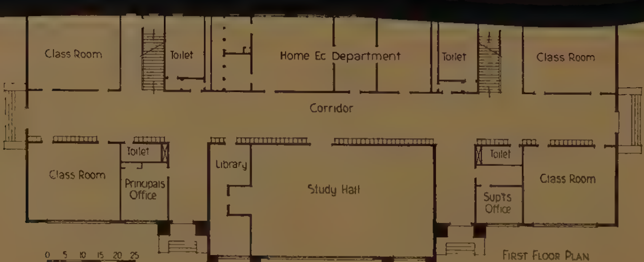
andrel walls were formed against horizontally aged board forms. For contrast, mullions formed against plywood and are smooth as also the projecting sills and window heads. only finish treatment was a grout cleaning. esigned by the USED at Washington, D. C., building was erected by Mont Green Con-tion Co., of nearby Manhattan, Kan.

First Architectural

s the first architectural concrete school in Arkansas, built
was designed by Marion L. Crist and Associates, enginee

f the board, headed by A. G. Atkinson, presid
several visits to recently erected architectural
tructures in nearby states, since concrete had n
ised as the architectural material for school
as previous to this time. Their investiga
ted them that concrete could produce maxim
in size, appearance and firesafety at a cost
he budget allowed.
uilding, as designed, consists of 13 classrooms
mbly halls, and the cost had to be kept wi
. This called for rigid economy in design and
ninimum building code requirements. Howe
tance, were safety and utility of the building
achieving this economy.
ructure is a wall-bearing type with 8-in. exte
d 6-in. interior walls—all reinforced with a si
of ⅜-in. round bars. Over the large window o
was necessary to use the full depth of the span
, and as a consequence, all horizontal construc
s were located at the sills and window heads. Co
nts were used with highly satisfactory results, and
writer believes that they should be provided genero
in every building. When they are properly located
constructed they do not detract from the initial appear
of the building and most certainly assure better appear
throughout the life of the structure.

Ground floors of the building are 6 in. thick and res
a cinder fill except for those portions excavated for
basement heating units and a 3-ft. wide conduit tun



First Floor Plan

ing destroyed by fire at Mena. During the past four years, more than 100 schools have burned in the state at a cost of at least $1,000,000. The Mena was done by WPA labor.

second floor slab is 4 in. thick and the roof 3½ in. thick. ms are left exposed.

oth exterior and interior wall surfaces were cast against vood and finished with paint—the exterior painted te and the inside a light buff. There is no furring on exterior wall and no discomfort has resulted from this n though Mena has summer temperatures in excess of deg. F. and winter temperature below zero with daily nges of 40 to 50 deg. common during certain seasons of year combined with quite high humidity.

he floors are topped with asphalt tile throughout. ce firesafety was the foremost aim in design and choice naterials, an incident that occurred during construction convincing evidence that this goal had been achieved. ile the built-up roofing was being applied, the equip- nt for heating the roofer's pitch was accidentally over- ned. The pitch and roofing felt immediately burst flames and, fanned by a strong wind, burned furiously il extinguished by the Mena Fire Department. The r or five squares of roof over which this fire raged re thoroughly examined later and no damage of any d was discovered. Since the building is entirely concrete, ept for steel sash, wood doors and toilet stalls, the zens of Mena are confident that the school fire danger been banished from this town forever.

Added to this was the decision of the fire underwriters give Mena School the lowest insurance rating in the te—about 8.1 cents against the previous 46 cents per 00 of valuation.

Concrete is one of the most readily adaptable building materials, and it proved to be particularly pleasing for the execution of the simple, modern lines of the Mena building. Concrete properly designed and placed, can make any structure safe from storms and fire which are two almost equally serious hazards in this section of the country.

Arkansas Needs More Schools that Won't Burn

By J. L. Taylor*

FOR as long as I can remember, fires have been destroying Arkansas schools at the rate of about 30 every year. During the past four years more than 100 school buildings have burned for a loss of at least $1,000,000. This includes damage ranging from as little as $1,000 for fires in small structures to $100,000 in one community alone.

During the fiscal year ending July 1, 1943, an intensive campaign against fires conducted by the Department of Education has resulted in a 50 per cent reduction of these fires over the previous year. But this is not enough, since fires in any schools are costly in several ways: they endanger lives; they disrupt school activities; and they induce an abnormally high insurance rate for school buildings throughout the state.

The new Mena High School is an example of firesafe

*Department of Education, State of Arkansas.

construction which will aid effectively in our campaign to reduce this tragic loss in school buildings and equipment. It will be seen that the reduction in fire insurance rate alone, from 46 to 8.1 cents, will over a period of years pay a considerable portion of the original cost of such a building.

Destruction of these school buildings by fire during wartime has been particularly distressing in view of the dif- ficulty of replacing these buildings due to shortages in man- power and materials. It must be hoped, however, that whe[n] public works construction is resumed on a large scale, o[ur] Arkansas schools can be replaced by construction as sa[fe] from fire and storm as the new Mena High School.

Modernizing with Architectural Concre[te]

By G. A. Pehrson*, AIA

BEFORE the war brought private construction to a virtual standstill there was considerable work done in modernizing or altering old building fronts to give them a pleasing or bolder face, and a touch of new architectu[re]. In general this modernization consisted of stripping off [ol]d facing materials and replacing with new and more mode[rn] materials in new lines and details. Occasionally the [in]teriors were renovated.

Davenport Hotel Garage, Spokane, Wash., was remodeled from an old three-story structure by removing all but the old side walls and part of the rear wall, and providing a new roof, new floors, and an architectural concrete front. G. A. Pehrson, of Spokane, was architect for the improvement.

A more complete modernization was accomplished [i]n the construction of a parking garage for the Davenp[or]t Hotel at Spokane, Wash. Opposite the hotel, which cov[er]s an entire block, is a row of old buildings, most of the[m] three stories in height. The hotel acquired one of the[se] buildings directly opposite the main entrance and co[n]verted it to parking use as illustrations here indicate.

The interior of the old building was first completely [re]moved, only the rear wall and property line bearing was on the sides remaining. A new roof carried on light ste[el] trusses which spanned from side to side was then install[ed] and a new concrete floor was built at street level. T[h]e rear wall was reconstructed above the alley with large pan[el]s of glass block. The principal change, however, was [i]n building a new main facade. The old brickwork w[a]s completely removed and replaced by a glass and alumin[um] wall within an architectural concrete frame.

Constructing the curved and fluted reveals, which a[re] recesses for cove lighting, presented a problem. The co[n]crete had to be placed directly against the adjoin[in]g building walls and against the front end of the masonry side walls of the old building. This prevented the use [of] braces on two sides of the form in the usual manner, a[n]d the locating of tie rods was complicated by the use [o]f existing walls as part of the forms. The difficulty foresee[n] was to place the concrete without the weight of fr[esh] material forcing the forms toward the center of the openi[ng].

*Spokane, Wash.

: illumination is one of the features of the alteration. The decora-
ns, which provided an interesting forming problem, are fluted
ncealing neon lighting. Form details are shown at right.

The best solution to this problem was to erect the column ms to their full height and brace them against each other n side to side across the front of the building. The forms e constructed as shown in the accompanying sketch l held to the existing walls by anchor bolts.

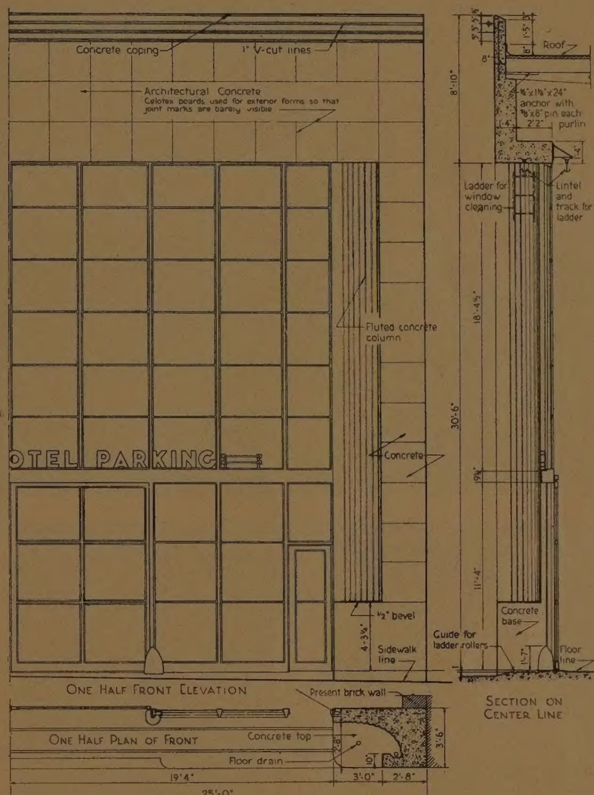
To avoid dropping concrete the full height of the forms l thus splashing the exposed form surfaces and causing regation of materials, pockets were cut in the back of the n at about 6-ft. intervals. Concrete was then deposited ough these holes which were closed over by inserting a ce of form sheathing when concrete reached the lower e of the holes.

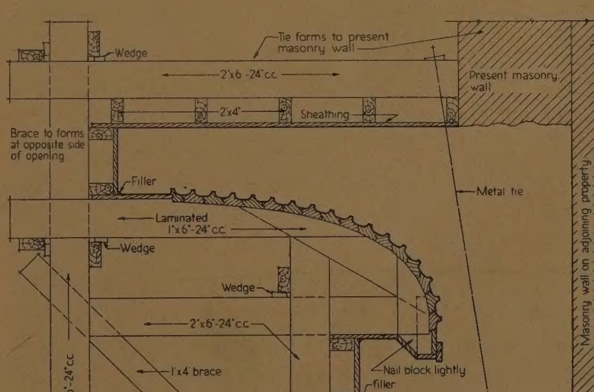
Since placing concrete unevenly in the two columns ght cause breakouts, concrete was deposited in both umns at the same time and at a comparatively slow e. Construction joints were avoided by placing the umns in one continuous operation.

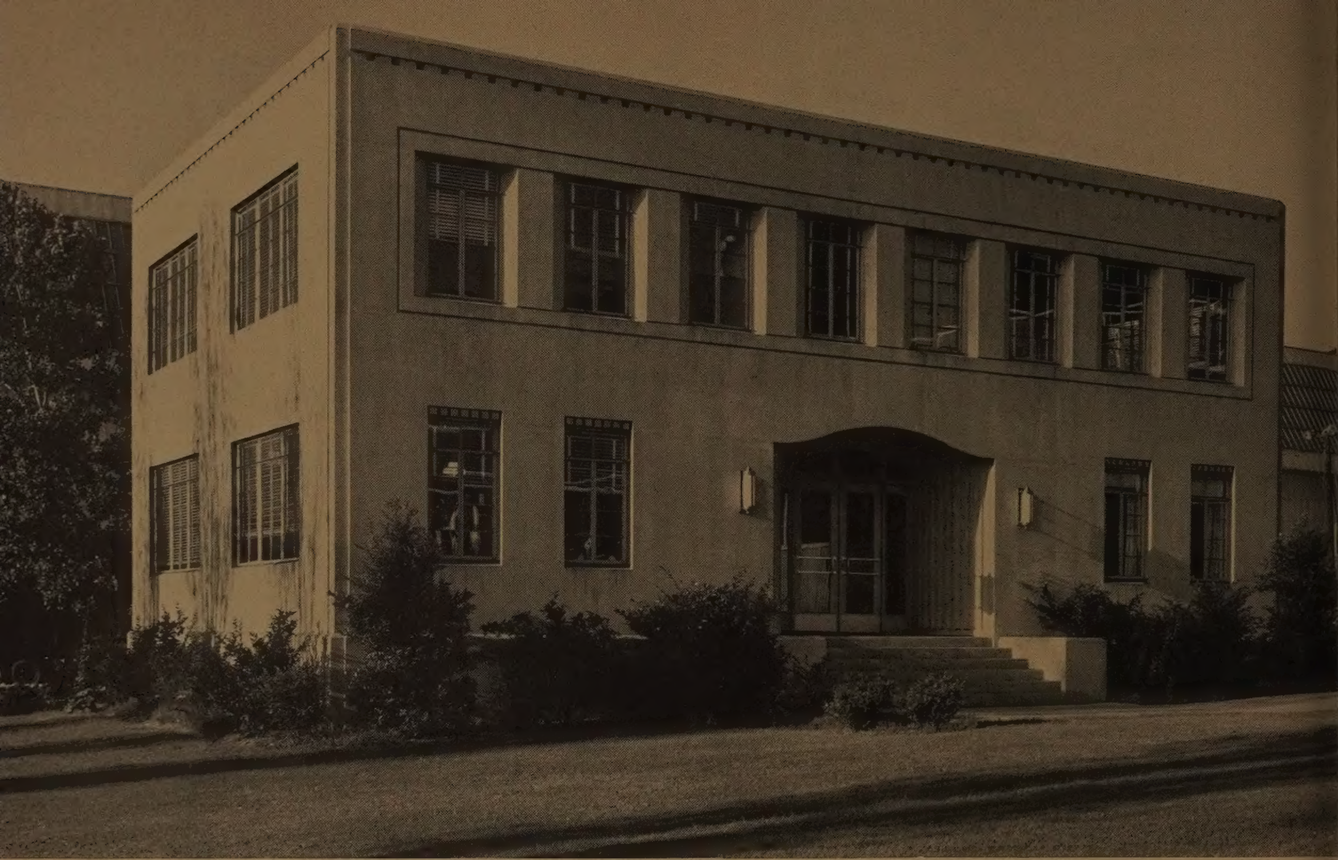
When the columns were completed and the concrete l hardened, forms were stripped and shoring for the ndrel beam forms was erected. Forms were then embled on the shoring, with stud bolts 4 in. below the of the columns used to clamp the beam sides tightly inst the hardened concrete of the columns. Placing ncrete in the spandrel beam was a comparatively simple tter.

Exposed concrete surfaces were then cleaned down and en the glazing was finished the whole job was complete. Thus a very pleasing transformation was effected at mparatively small cost. At night the illumination from the specially designed pendant fixtures of the interior and from the concealed floodlighting of the curved fluted columns, is highly satisfactory.

It is planned to install two floors in the building at some future date, converting the building into a three-story garage. In the meantime, with motor traffic reduced to a minimum, the building serves as an enclosed parking lot of very attractive appearance.







Office for Jones & Laughlin Corp., at Memphis, is a small architectural concrete structure. Walls are smooth-formed with simple detail employing wood mold... designed by Walk C. Jones & Walk C. Jones, Jr., Memphis architects, and built by S & W Construction Co., pioneers in architectural concrete in western T...

Office for Jones & Laughlin—Memphi[s]

By E. E. Schmied*

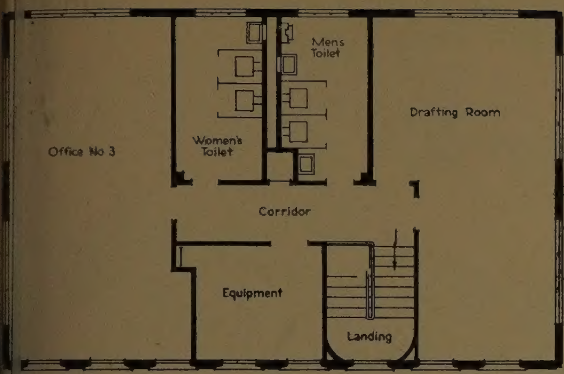
A NEW office building for Jones & Laughlin Steel Corp. at Memphis is typical of the type of architectural concrete structures our firm has learned to take in stride and to produce economically. It is a comparatively small building—used primarily to house the management activities of a fabricating plant; it is simple in design with plain walls, well-ordered openings, and architectural details confined to the entrance.

The walls were formed with Presdwood liners which produce smooth surfaces at comparatively low cost for form construction. The forms were erected up to second-floor level and then, after the first lifts of concrete were placed, the forms were raised to complete the walls to the top of the parapet. There were no unusual problems. The job was finished with dispatch and occupied at an early date.

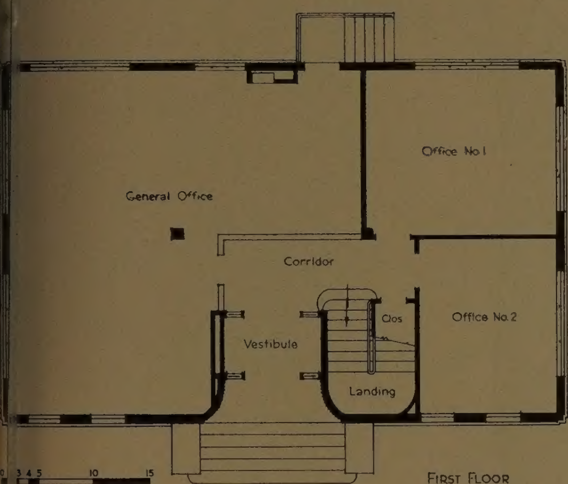
Our construction organization has pioneered architectural concrete in this region for several good and apparent reasons. Available building funds in the South are usually small. Many times after plans are developed by architects and approved by clients as desirable, it is found that not enough money is available to carry out the project as envisioned. How to make the job go is frequently solved by the architect and contractor getting together on a construction scheme that will meet the financial program without sacrificing too much in size and elegance of structure. Concrete can usually solve this problem because materials necessary for it are inexpensive and labor required to produce good concrete work is readily available.

Sometimes money can be saved by simplifying the design, employing so-called modern details which are more easily constructed and are highly appropriate for architectural concrete. In such cases little or nothing is sacrificed in size of building.

*President, S & W Construction Co., Memphis, Tenn.



SECOND FLOOR



FIRST FLOOR

Ve effect further economies by maintaining a storage d for forming materials. For small buildings we can actically always find used forms, cleaned and kept in dry ds, that can be adapted to new projects. Otherwise the d to buy and fabricate new forming materials would l considerably to the cost of the building. In wartime en wood of all kinds is scarce, form storage and re-use ot only economical but patriotic.

The skill in erecting an architectural concrete building, compared with masonry structures, is in detailing the ms and perfecting the construction schedule on the awing board and not in laying up the walls. We have nd that carefully planned forms can be handled on the by ordinary labor under good supervision. All that is essary is that our engineer visit the job at intervals to that these detailed form plans are followed to the letter. hen good concrete is handled properly in well-designed ms, the result is inevitably a satisfactory architectural ncrete building.

It is sometimes overlooked that in building with concrete larger the building the more economical it will be from ery standpoint. Forms can be used repeatedly for identical details, saving time and form cost. The unit cost of concrete walls diminishes with the size of the structure more rapidly than for masonry walls. All materials and equipment required for the structure can be brought onto the site at one time, and one type of construction labor employed from beginning to end can be used continuously without any work lags due to need for rounding-up special crafts. Rapid labor turnover is not as serious a problem in concrete construction as it is with other construction types.

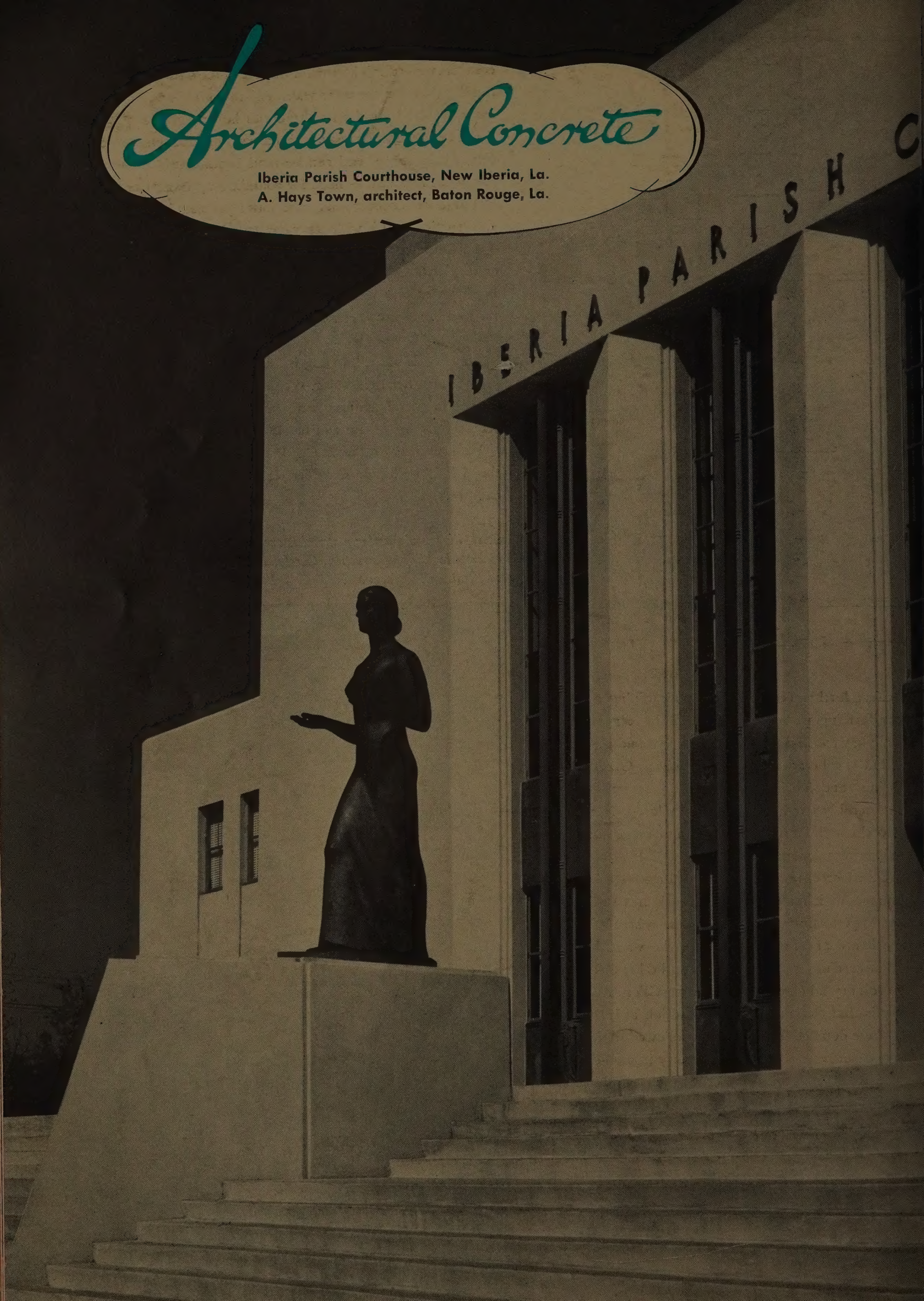
To assure proper concrete we always use our own concrete plant. Good aggregates of all kinds are obtainable in the Memphis area. Experience has shown what variations in mixes are necessary to produce workable concrete under varying conditions.

The J & L office building is finished by rubbing which gives it a rather light color. We have also had considerable success in use of textured surfaces. Any surface treatment required by the design can be easily provided in concrete.

Walk C. Jones & Walk C. Jones Jr., were architects for the J & L building. Gardner & Howe were structural engineers.

Stockpiling used forming material is one way to economize on small architectural concrete building construction. Careful handling of plywood sheathing produced excellent wall surfaces on the J & L building.

Architectural Concrete



Iberia Parish Courthouse, New Iberia, La.
A. Hays Town, architect, Baton Rouge, La.